

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims

1. (Currently Amended) A computer processor having control and data processing capabilities comprising:

a decode unit for decoding instructions;

a dedicated control processing facility comprising a control execution path having its own control register file; and

a dedicated data processing facility having its own data register file, the data processing facility comprising a first data execution path including fixed operators and a second data execution path including at least configurable operators and a controller, said configurable operators pre-configured into a plurality of hardwired operator classes;

wherein said decode unit is operable to detect whether a data processing instruction defines a fixed data processing instruction or a configurable data processing instruction, said decode unit causing the computer processor to supply said data processing instruction to said first data execution path for processing when a fixed data processing instruction is detected and to said configurable data execution path for processing when a configurable data processing instruction is detected; and

wherein said controller is operable to configure the connectivity of said configurable operators in accordance with configuration information provided in an opcode portion of said configurable data processing instruction.

2. (Original) A computer processor according to claim 1, wherein the decode unit is capable of decoding a stream of instruction packets from memory, each packet comprising a plurality of instructions.

3. (Original) A computer processor according to claim 1, wherein the decode unit is operable to detect if an instruction packet contains a data processing instruction.

4. (Original) A computer processor according to claim 1, wherein the configurable operators are configurable at the level of multibit values.

5. (Original) A computer processor according to claim 4, wherein the configurable operators are configurable at the level of multibit values comprising four or more bits.

6. (Original) A computer system according to claim 4, wherein the configurable operators are configurable at the level of words.

7. (Original) A computer processor according to claim 1, wherein a plurality of the fixed operators of the first data execution path is arranged to perform a plurality of fixed operations in independent lanes according to single instruction multiple data principles.

8. (Original) A computer processor according to claim 1, wherein a plurality of configurable operators of the second data execution path is arranged to perform multiple operations in different lanes according to single instruction multiple data principles.

9. (Original) A computer processor according to claim 1, wherein configurable operators of the second execution path are arranged to receive configuration information which determines the nature of the operations performed.

10. (Original) A computer processor according to claim 9, wherein configurable operators of the second execution path are arranged to receive configuration information which determines the nature of the operations performed from a field of an instruction defining a configurable data processing operation.

11. (Currently Amended) A computer processor according to claim 1, wherein configurable operators of the second execution path are arranged to receive configuration information comprising information controlling ~~relative-interconnectivity~~ of the configurable operators.

12. (Previously Amended) A computer processor according to claim 9, comprising a control map associated with configurable operators of the second data execution path, said control map being operable to receive at least one configuration bit from a configurable data processing instruction and to provide configuration information to the configurable operators responsive thereto.

13. (Original) A computer processor according to claim 12, wherein said configuration information controls interconnectivity between two or more of said configurable operators.

14. (Original) A computer processor according to claim 1, wherein configurable operators of the second execution path are arranged to receive either configuration information determining the nature of an operation to be performed or configuration information controlling interconnectivity from a source other than a configurable data processing instruction.

15. (Original) A computer processor according to claim 1, wherein at least one configurable operator of the second data execution path is capable of executing data processing instructions with an execution depth greater than two computations before returning results to a results store.

16. (Original) A computer processor according to claim 1, comprising a switch mechanism for receiving data processing operands from a configurable data processing instruction and switching them as appropriate for supply to one or more of said configurable operators.

17. (Original) A computer processor according to claim 1, comprising a switch mechanism for receiving results from one or more of said configurable operators and switching the results as appropriate for supply to one or more of a result store and feed back loop.

18. (Original) A computer processor according to claim 1, comprising a plurality of control maps for mapping configuration bits received from configurable data processing instructions to configuration information for supply to configurable operators of the second data execution path.

19. (Original) A computer processor according to claim 1, comprising a switch mechanism for receiving configuration information from a control map and switching it as appropriate for supply to configurable operators of the second data execution path.

20. (Original) A computer processor according to claim 1, comprising configurable operators selected from one or more of: multiply accumulate operators; arithmetic operators; state operators; and cross-lane permuters.

21. (Original) A computer processor according to claim 1, comprising operators and an instruction set capable of performing one or more operations selected from: Fast Fourier Transforms; Inverse Fast Fourier Transforms; Viterbi encoding/decoding; Turbo encoding/decoding; and Finite Impulse Response calculations; and any other Correlations or Convolutions.

22. (Currently Amended) A method of operating a computer processor having control and data processing capabilities, said computer processor comprising a decode unit for decoding instructions, a dedicated control processing facility comprising a control execution path having its own control register file, and a dedicated data processing facility having its own data register

file, the data processing facility comprising a first data execution path including fixed operators having a plurality of predefined ~~hardwired operator classes~~, ~~at least some of the interconnectivity of said operators is selectable by means of an opcode portion of a data processing instruction and~~ a second data execution path including at least configurable operators and a controller, said configurable operators pre-configured into a plurality of hardwired operator classes, the method comprising:

decoding a plurality of instructions to detect whether at least one data processing instruction, of said plurality of instructions, defines a fixed data processing instruction or a configurable data processing instruction;

causing the computer processor to supply said data processing instruction to said first data execution path for processing when a fixed data processing instruction is detected and to said configurable data execution path for processing when a configurable data processing instruction is detected;

configuring the connectivity of said configurable operators in accordance with configuration information provided in an opcode portion of said configurable data processing instruction; and

outputting results produced by said execution path.

23. (Currently Amended) A computer-readable medium comprising executable code for controlling a computer processor having control and data processing capabilities, said computer processor comprising a decode unit for decoding instructions, a dedicated control processing facility comprising a control execution path having its own control register file, and a dedicated data processing facility having its own data register file, the data processing facility comprising a

first data execution path including fixed operators and a second data execution path including at least configurable operators ~~and a controller~~, said configurable operators ~~having a plurality of predefined hardware operator classes~~, ~~at least some of the interconnectivity of said operators is selectable by means of an opcode portion of a data processing instruction, pre-configured into a plurality of hardware operator classes~~, to:

decode a plurality of instructions to detect whether at least one data processing instruction, of said plurality of instructions, defines a fixed data processing instruction or a configurable data processing instruction;

cause the computer processor to supply data processing instruction to said first data execution path for processing when a fixed data processing instruction is detected and to said configurable data execution path for processing when a configurable data processing instruction is detected;

configure the connectivity of said configurable operators in accordance with configuration information provided in an opcode portion of said configurable data processing instruction; and

output results produced by ~~a selected said~~ execution path.

Claims 24-29 (Cancelled)